MINING APPLICATION
No. Act/023/003

DATE: [illegible]

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

MINING AND RECLAMATION PLAN--REVISED

1. Name of Applicant or Company: Brush Wellman Inc.

2. Proposed type of operation: Open-pit mining

3. (a) Prior land use: Grazing
   (b) Current land use: Grazing and mining
   (c) Possible or prospective future land use: Grazing

4. What vegetation exists on the land proposed to be affected:
   Ragweed, rabbit brush, brigham tea, sagebrush, halogeton
   (a) Estimated percent cover or density: 10-15%

5. What is the range pH of the soil before mining? 7.9 to 8.2 pH
   (a) Name of agency: Ford Chemical Laboratory, Inc.
   Method of determining pH: Chemical analysis

6. Site elevation above sea level: approximately 4,800 feet

7. In the case of coal, oil shale and bituminous sandstone;
   Principal seam and thickness: DNA

8. Estimated duration of mining operations: 50+ years

9. Has overburden, waste or rejected materials been classified as acid or alkali producing? Yes; Alkali

   Does the above material being moved have any other characteristics affecting revegetation? No

10. Is there any active discharge of water from abandoned deep mines on or crossing the land affected? No

    Will any underground workings or aquifers be encountered? No

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11. Describe specifically a detailed procedure for:
(a) MINING SEQUENCE

The techniques and methods used for mining beryllium bearing ore from the Company's mining properties in western Utah are considerably different from the normal day-to-day mining operations engaged in by other mining companies.

To help one better understand the Company's operations and the sequence in which property development and mining operations are scheduled, a short discussion on the beryllium mineralization is given:

1. The mineralization contained within the host rock produce no visible physical characteristics which would help one identify the presence of mineralization. The beryllium mineralization is colorless and the crystal structure is too small for recognition by the naked eye. To properly identify the existence of beryllium mineralization and determine if an economic ore body exists, the mining division first completes a geological and geochemical study of the area. The study is followed by an exploration and development drilling program to determine the existence of commercial ore.

2. During the exploration and development drilling program, holes are drilled on a grid of approximately 100 feet. Data collected provides information on the size of an ore body, its thickness and grade. From this drilling, information is also provided on rock materials which make up the cover which overlie the ore body and must be removed in the event of mining and recovery of the ore.

3. The mineralization is low-grade and demands constant control for effective and economic mining. In addition to low-grade mineralization, the thickness of the ore body is extremely variable. Ore grade distribution in place is inconsistent, requiring a very tight control for successful mining.

4. We do not have one large mineralized area, but an area which contains several mineralized ore bodies. Each one differs in physical and chemical characteristics and requires variations in our mining approach.

The various characteristics of each area; the low mineral content, variable ore grade distribution and ore body thickness create the need for unusual techniques and methods of mining the beryllium bearing ore.

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To maximize recovery and use of all available ore, two open-pit operations are worked jointly. The ore is mined and stockpiled at the Company's mining property, then hauled or transported to the Company's processing facilities located near Delta, Utah. The ore is blended at the Delta facilities to produce an acceptable mill feed.

Designing an Open-Pit

As stated, Brush's operations require a different mining approach. We do not have a continuous operation which requires the daily removal of spoils material, followed by continuous mining.

Following is the operation sequence.

A section of the ore body is selected for production. An open-pit is designed which will expose a two to three year supply of ore.

An earth-moving contractor is engaged for the removal of rock materials to designated spoils areas. The contractor does not become involved in mining (actual ore lifting and stockpiling), only the removal of rock materials to the spoils area.

Spoils or waste areas are selected and designed to create the least adverse effect on existing terrain and topography. Slopes of all spoils or waste piles are stabilized at the angle of repose. Where hard or broken rock is deposited, it is eventually covered with fine materials, which reduces slope angle and blends with existing conditions. The heels of all slopes of all dumps are to be rounded before covered with fine materials. The fine material is to be spread to a thickness of from 6" to 12" to cover the hard and broken rock. In some instances, sufficient fines are not available to completely cover the hard or broken rock materials removed during open-pit construction. In these instances, the area is designed for additional cover as it becomes available through future open-pit operations.

All spoils or waste areas are designed to conform as nearly as possible with existing terrain. Additionally, when all ores are recovered from an area in which open-pit operations have been concluded, rock and spoils materials from future open-pit projects adjacent to the mined out pits will be deposited in the mined-out areas. The placing of rock and spoils material in mined-out areas will be determined by the economic value of any remaining mineralization in the old operations.

To provide a safe abandonment of any open-pit, a permanent, impassible barrier will be constructed around the high wall of the pit. The barrier will be a narrow ridge of blocky resistent rock at least 4 feet high with steep side slopes. The barrier will be erected approximately 20 feet back from the heel or tip

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of the pit. The broken rhyolite material will normally be the resistent rock used for the barrier.

Mining

As noted earlier, an open-pit project, or the enlargement of an existing open-pit, exposes a volume of ore which will be used as mill feed over a period of two to three years. Mining of the ore does not commence immediately as additional work must be completed on the exposed ore before it is ready for mining. A specific area of the ore body is selected for mining. A volume equal to one year's supply of mill feed is calculated in the mining plans. The ore body is prepared for mining and stockpiling.

Future Open-Pit Planning

To meet the Company's continued requirements of beryllium ore, the expansion of existing open-pits and the exposing of additional ore on adjacent properties will continue for many years into the future. Open-pit operations, or the removal of rock materials to spoils areas, are planned on a two to three year cycle, depending on ore demands. The next operation, as now planned, is scheduled for the period of March through November, 1981. This operation will be followed by an operation in approximately two to three years. Such a sequence will follow for an indefinite period of time until all ore economically recoverable through open-pit mining methods has been exhausted. At that time, underground mining will commence if economically feasible.

During underground mining operations, spoils materials will again be deposited in selected areas and so placed to conform with existing terrain.

During all operations, mining will be conducted in a safe, orderly manner. Brush Wellman will take the steps detailed in this MR Form 2 to prevent unnecessary or undue degradation of the lands mined and otherwise disturbed by mining operations.

At the conclusion of all mining operations, unusable buildings, lumber, scrap metal and equipment will be removed from the mine site.

11. (b) The procedure for constructing and maintaining access roads, to include a typical cross-section and a profile for the proposed road grades:

There are no road grades except in the open pit. Topography of the area is nearly horizontal and very low in profile. Roads in the area have existed for many years. Prior and continued use of the roads today is for mining, livestock and recreation.

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11. (c) The procedure for site preparation, including removing trees and brush.

There are no trees and very little vegetation.

11. (d) The method of removing and stockpiling topsoil or disturbed materials.

There is no topsoil. Surface cover is Lake Bonneville sediments of sand and gravel (alluvium). The sand and gravel does support limited growth as indicated by the reported vegetation cover. (MR-2 #4)

11. (e) The method for the placement or containment of all disturbed materials, to include the method for handling of all acid or alkali-producing and toxic material.

Rock waste is deposited in designated areas to conform to surrounding topography. Rock slopes are covered with fine materials. Disturbed materials are not toxic.

11. (f) A procedure for final stabilization of disturbed materials.

Slopes are stabilized to the angle of repose.

GRADING AND REGRADING

1. Specifically describe:

(a) Typical cross-section of regrading.

See attached Plate #3

(b) The method of spreading topsoil or upper horizon material on the regraded area and indicate the approximate thickness of the final surfacing material.

Thickness varies depending on the size of broken rock. Fine materials of a thickness of from 6" to 12" will be placed over the dump or spoils area.

(c) What type of soil treatment will be utilized?

If determined advisable by the test plot experiment, which is being conducted jointly by the Company and the Division of Oil, Gas and Mining, scarification or plowing will be continued along with supplemental fertilization.

(d) The method of drainage control for the final regraded area.

Because of light precipitation, drainage control is no problem. Seasonal entrapment of water in the bottom of

the open-pit provides water that is utilized by Juab County Road crews and sheep herds that graze in the area. The footwall will be left in a rough post-mining condition. Such condition will help to trap water and possibly support vegetation. Some benching conditions may exist which will also trap water and aid vegetation.

(e) Maximum grading slope.

Angle of repose, approximately 45 degrees maximum.

TESTING

1. (a) Describe method for testing stability of reclamation fill material.

Past experience indicates no breakdown in slope stability.

(b) Describe method for the testing of soil that is intended to support vegetation.

Revegetation test plot experiments are in progress to determine the feasibility of various revegetation programs. The test plot program is a joint effort of the Company and the Division of Oil, Gas and Mining.

2. Describe any soil treatment employed as an aid to revegetation.

Treatment will be determined by test plot program conducted jointly by the Company and the Division of Oil, Gas and Mining.

3. Describe surface preparation of areas intended to support vegetation.

Procedures will be determined by test plot program conducted jointly by the Company and the Division of Oil, Gas and Mining.

REVEGETATION

1. Revegetation to be completed by:

Method to be determined by test plot program conducted jointly by the Company and the Division of Oil, Gas and Mining.

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2. Will mulch be used?

The mulch used in the test plot program was straw scarified into the soil.

3. Revegetation plan and schedule.

The Division of Oil, Gas and Mining will cooperate with the Company in determining a feasible revegetation plan and schedule. The schedule may change as determined by the test plot experience.

SCHEDULE

SPECIES	LB/AC	FACING N-S-E-W	SEASON TO BE PLANTED
Russian Wildrye	2	All	Nov.-Jan.
Fairway crested wheatgrass	2	"	"
Standard crested wheatgrass	2	"	"
Indian ricegrass	1	"	"
Yellow sweetclover	2	"	"
Alfalfa (nomad)	1	"	"
Winterfat	2	"	"
Fourwing saltbush	2	"	"

14 lb/ac.

(a) Planting will take place on a disturbed (scarified) seedbed. Seed rates per acre are based on hand broadcasting methods, which will be followed by dragging a chain or light rail over the seeded area.

(b) If fill erosion persists, slopes over 20% will be scarified on contours to enhance water retention on the dump. Very little erosion has been observed to occur on slopes of dumps.

(c) The experimental plots which have been established include several variables in the total area of two acres. The variables will continue to be determined by the progress of the test plot experiments and include slope (erosion) control, fencing protection, fertilization and planting techniques.

4. Will affected area be subject to livestock or wildlife grazing?

No.

5. Will irrigation be used?

No.

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6. Describe maintenance procedures for revegetation if needed, until surety release is granted.

If the test plot experiment proves revegetation is feasible, maintenance of the revegetated area will be conducted during the livestock grazing season in an effort to give the reseeding project an opportunity to establish a root system.

The restrictions placed on any livestock grazing must be acceptable to the livestock owners using the area for grazing purposes.

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STATE OF Utah

COUNTY OF Salt Lake

I, Kenneth R Poulson, having been duly sworn depose and attest that all of the representations contained in the foregoing application are true to the best of my knowledge; that I am authorized to complete and file this application on behalf of the Applicant and this application has been executed as required by law.

Signed: [signature]

Taken, subscribed and sworn to before me the undersigned authority in my said county, this 3rd day of February, 1981.

Notary Public: William B Gray

My Commission Expires: 8-22-8?

PLEASE NOTE:

Section 40-8-13(2) of the Mined Land Reclamation Act provides as follows:

"Information relating to the location, size, or nature of the deposit and marked confidential by the operator, shall be protected as confidential

information by the Board and the Division and not be a matter of public record in the absence of a written release from the operator, or until the mining operation has been terminated as provided in subsection (2) of section 40-8-21."

Is confidential information contained herein?

YES _____ (Initial)

NO _____ (Initial)

Sections desired to be maintained as confidential information:

Section 8; Section 1(a) of "Grading and Regrading;" Plate 1 "Topaz Mining Properties;" ~~Plate 2 "Primary and Secondary Road System--Topaz Area;" Plate 3 "Cross-section Spoils Area"~~